

9. ACCEPTANCE CERTIFICATE

Image Intensifier Tube

Gen. 2+	Required	Measured
Resolution, lines/mm	30	
Photocathode sensitivity, integral, $\mu\text{A}/\text{lm}$	400	
Light amplification	20,000	
Gen. 3		
Resolution, lines/mm	35	
Photocathode sensitivity, integral, $\mu\text{A}/\text{lm}$	1,000	
Light amplification	25,000	

Image Intensifier Tube Serial Number: _____

Date of production: _____ Quality Inspector Signature: _____

NIGHT VISION DEVICE NVS7-2/4x / NVS7-2/4xHD

Serial Number _____ corresponds to all technical specifications and is admitted for use.

Date of production: _____ Quality Inspector Signature: _____

Quality assurance seal

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NIGHT VISION BINOCULARS NVS7-2/4x / NVS7-2/4xHD

In USA: 2331 Superior Ave. Cleveland, OH 44114
In Canada: 105 Sparks Ave., Toronto, ON M2H 2S5
Tel: (416) 663-6963 Fax: (416) 663-9065

IMPORTANT INFORMATION

Read prior to activation

**You have just purchased a complicated electronic device.
To operate it properly, please read this manual carefully.
Here are some common precautions that must be noted.**

- **NEVER** disassemble the unit. This device contains high voltage, which may be hazardous to your health!
- **NEVER** expose the opened objective lens of an active unit in daylight. At daytime objective lens must be covered by caps. There is a tiny hole in the cap to provide enough light for daytime operation. It is allowed to turn on the unit at daytime, but caps must cover the lenses.
- **NEVER** aim active unit at intense light sources (i.e. lights, headlamp, campfires, the moon, etc.)
- **NEVER** reverse the polarity of a battery
- **NEVER** connect the unit to external power sources
- **ALWAYS** remove batteries when not in use for a long period
- **ALWAYS** keep the objective lenses covered when not in use
- **ALWAYS** store in a warm dry place when not in use

7. WARRANTY:

NEWCON OPTIK warrants this product against defects in material and workmanship for one year from the date of the original date of consumer's purchase, but no more than 18 months from the date of manufacturing. Should your Newcon product prove defective during this period, please bring the product securely packaged in its original container or an equivalent, along with proof of the date of original purchase, to your Newcon Dealer. Newcon will, replace or repair (or at its option replace), the product or part thereof, which, on inspection by Newcon, is found to be defective in materials or workmanship.

What This Warranty Does Not Cover:

NEWCON is not responsible for warranty service should the product fail to be properly maintained or fail to function properly as a result of misuse, abuse, improper installation, neglect, damage caused by disasters such as fire, flood, lightning, improper electrical current, or service other than by a NEWCON Authorized Service. Postage, insurance, or shipping costs incurred in presenting your NEWCON product for warranty service are your responsibility. Please include a cheque or money order made out to NEWCON OPTIK for the amount of \$10.00 to cover shipping and handling.

8. Customer Support

Should you experience any difficulties with your Newcon OPTIK product, consult the enclosed manual. If the problem remains unresolved, contact our customer support department at (416) 663-6963 or Toll free at 1-877-398-6666. Our operating hours are 9am-5pm, Monday - Friday, standard East time. At no time should equipment be sent back to Newcon without following the instructions of our technical support department.

Newcon accepts no responsibility for unauthorized returns.

To locate NEWCON Authorized Dealer call:

Tel: (416) 663-6963 Fax: (416) 663-9065

Email: newconsales@newcon-optik.com

Web: www.newcon-optik.com

The defective products should be shipped to:

From USA only: 2331 Superior Ave. Cleveland, OH 44114

From all other countries: 105 Sparks Ave., Toronto, ON M2H 2S5, CANADA

6. TROUBLESHOOTING

The unit does not work.

Check that the battery is installed properly.

Check the charge of the batteries. Replace if it is weak.

The image does not appear in focus.

Bring the inspected object to the center of the image. Turning the eyepieces (6) adjust to achieve the clearest image on the screen. Then obtain the most clear-cut image of the object focusing the lens (2). Repeat the steps of focusing if necessary

If the view still does not seem in focus, clean the lenses - they could be foggy or dusty.

Unit flashes

It is normal for the unit to flash within the first 2 minutes of activation. If the flashing continues afterwards the following is a possible cause: bright environment (even with the caps closed!)

Condensation accumulates on the parts.

It is O.K. to use the unit in cold. However, when the unit is brought from the cold into a warm environment, it has to warm up for up to 2 hours (not minutes!).

Only then it is allowed to turn it ON again.

CONTENTS

1- Overview

i) Application and Advantages

ii) Warning

iii) Precautions

2- Components

3- Specifications

4- Construction

5- Operating Instructions

5.1 Pre-starting procedures

5.2 Operation at night

6- Troubleshooting

7- Warranty

8- Customer support

9-Acceptance Certificate

THANK YOU FOR PURCHASING THE NIGHT VISION BN5-2M. PLEASE DEMAND TO CHECK THE DEVICE FOR PROPER OPERATION WHEN BUYING IT. PLEASE READ ALL THE INSTRUCTIONS CAREFULLY BEFORE USING.

1. OVERVIEW

The night vision NVS7-2/4X / NVS7-2/4XHD is observational binoculars, intended for examining objects and orientation at nighttime or dark conditions. The unit utilizes a generation 2+ or 3 image intensifier, which amplifies available moonlight, starlight or man-made light. The binoculars were designed to be easy to use, and provide many years of operation.

Some of the typical activities where the binoculars will be useful:

- Law enforcement
- Wildlife observation
- Security
- Search and rescue
- Hunting
- Photography (Dark room operation)

Features

- Waterproof construction
- Built-in Infra Red illuminator allows observations in total darkness (i.e. basement, cave or dark room);
- Independently adjustable eyepieces;
- Lightweight and comfortable;
- Soft rubberized eye pieces makes the viewing more comfortable;

Warning!

After transportation or keeping the device at temperature lower than -25°C (-13°F), the device must be warmed up to ambient temperature, from -25°C (-13°F) to $+40^{\circ}\text{C}$ (104°F), relative humidity of 80% max. at 20°C (68°F), for at least 2 hours.

Precautions

NVS7-2/4X / NVS7-2/4XHD is a sophisticated precision optical instrument equipped with electronics.

Therefore, it should be handled with due care.

- Keep your device away from direct sunlight, impacts, dust, moisture, and sudden changes of temperatures.
- Do not touch the optical surfaces with fingers.
Doing so may damage the anti-reflection coating.
- Cleaning of optical surfaces is allowed only with professional camera lens cleaning supplies.
- To clean the exterior of the device, use only a soft clean cloth.
- Do not take the cover off the lens if not necessary.
- Keep away from heating appliances and central heating.
- Make sure to switch off the unit and remove the batteries during periods of non-operation and when storing the device for long period of time.
- Do not apply superfluous efforts at work with lens assembly, agile elements and thread connections.
- Due to considerable optical magnification of the eye-piece some small structures inside the tube coating in the form of dark and/or white points may be seen in the field of view which does not affect the serviceability of the device;

5.2 Operation at Night

Unscrew the lens covers from the lens. Turn on the device by turning the switch to the on position. In case of insufficient lighting when observing an object which is situated not far from the viewer, turn on the I/R illuminator by turning the switch to the next setting.

Note: The illuminator will be activated only if the unit has been already switched on by switch.

Note: When looking directly in front of the binoculars operational illuminator appears as a red dot. The illuminator can be also detected using night vision device. Therefore, if you need to remain undetected, use the illuminator with caution.

If brightness of the screen is decreasing, replace the batteries. After operation the unit will automatically turn off after few minutes, till the complete discharge of the units power. Put protective lens caps on the lenses. This feature can be used to economically utilize the battery's power by periodically switching on and off the device during operation. After operation remove the battery from the battery compartment to avoid any damage of the device in case of occasional leakage of electrolyte from the battery.

5. OPERATION INSTRUCTIONS

**WARNING! NEVER OPERATE YOUR NIGHT VISION DEVICE IN DAYLIGHT
AREAS WITHOUT THE LENS COVER ON!
NEVER DIRECT THE LENS IN THE DIRECTION
OF BRIGHT LIGHT!**

5.1 Pre-starting procedures:

1. Unpack the device. In order to install the battery, first make sure the switch (1) is in the OFF position. Unscrew the battery house cover (5), and install 2 fresh AA batteries. Observe the correct polarity indicated on the housing. Screw the battery house cover back on. Check the functioning of the device by switching it on (rotate switch 1) and looking through eyepieces (4). (Make sure the lens cap is on while operating during the daytime). If power supply and the batteries are O.K., you will see greenish-lit screen. If the screen is not lit, check the batteries. Replace the batteries if necessary. If everything works, now is a great time to fill the warranty card.

2. COMPONENTS

NVS7-2/4X / NVS7-2/4XHD is supplied with the following components:

NAME	QUANTITY
BN5-2M	1
Head Set (optional)	1
Lens caps	1
Manual	1
Warranty Registration Card	1

3. SPECIFICATIONS OF NVS7-2/4x / NVS7-2/4xHD

Image Intensifier	Generation 2+ or 3
Magnification:	4
Field of View	40°
Focus range, m	0.25-∞
Interpupillary distance	58-72 (Automatic)
Dyoptric correction	± 5
Power supply	3V (2AA)
Battery life, hours	20 hours with I/R 50 hours without I/R
Dimensions, inches	5.9"x4.7"x2.2"
Dimensions, mm	150x120x55
Weight, just the goggles	1 lb.; 0.480 kg
Gross shipping weight	2.4 lb.; 1.1 kg

NOTE: As the design is being continuously improved some descriptions may differ from those given above.

IMAGE INTENSIFIER TUBE SPECIFICATIONS

The unit is utilizing a small size image intensifier with direct image transfer.

The tube contains a microchannel plate, multi-alkaline metal cathode, yellow-green color screen, built in electronics high voltage DC to DC converter and flat surface glass input-output windows.

Main parameters:

Image Intensifier Type (Generation)	2 +	3
Photocathode operating diameter, mm	18	
Photocathode type	S-25	A_3B_5 (GaAs)
Resolution, lines/mm	30-64	45-64
Photocathode sensitivity, min: Integral, $\mu A/lm$ Spectral at $\lambda = 850$ nm, mA/W	400-650 15	1300-2200 90
Light amplification	20-26000	25-30000
Image magnification	1	
Dark background brightness, max, cd/m^2	$1 \cdot 10^{-3}$	$3 \cdot 10^{-3}$
Signal-to-noise ratio, min	16-20	16-24
Current consumption, max, mA	20	25
Voltage, V	2.8 ± 0.8	
Weight, g	55	
Dimensions Length, mm Diameter, mm	22.5 43.0	
Tube life until reduced parameters, hrs	10,000	10,000
Keep time, years	12	15
Ambient temperature range, $^{\circ}C$	± 40	± 50

Spatial frequency-contrast characteristic

Frequency, lines/mm	Contrast transfer Coefficient (Gen. 2 +)	Contrast transfer Coefficient (Gen. 3)
2.5	0.83	0.86
7.5	0.56	0.58
15.0	0.26	0.28

Field of view cleanness

Zone # Gen. 2 +	Zone Diameter, Mm	Maximum diameter of defects			Admitted total area of defects, mm ²
		Neglected	Admitted		
			Ø, mm	Q-ty	
1	0 – 9.0	0.10	0.15	2	0.15
2	9.0 - 14.4	0.12	0.25	3	0.30
3	14.4 -18.0	0.15	0.35	3	0.50
Gen. 3					
1	0 – 8.75	0.06	0.15	1	0.072
2	8.75 – 14.0	0.08	0.25	2	0.27
3	14.0 – 18	0.10	0.35	3	0.45

4. CONSTRUCTION

1. On-Off, I/R Switch
2. Mounting Socket
3. Eye-piece adjustments
4. Eyepieces
5. Battery House Cover
6. Objective Lens focus



Figure 1